defied the sun in a black hard felt "bowler"; yet notwithstanding the neglect of ordinary tropical precautions everyone looked in the best of health. The men are bronzed and tanned; but one is glad to miss the sallow complexions and wan faces that Europeans show in tropical African coast towns.

The tolerance of heat shown in this part of Australia certainly supports Sambon's theory in regard to acclimatization. Sambon holds that there is nothing to prevent Europeans living and working as well as any black race in the hottest of tropical localities. He maintains that the supposed unsuitability of the Tropics for European settlement is due to disease and not to climate, and that as the special tropical diseases are due to germs, they may be cured or prevented when the life histories of the germs are known.

Of course the climate of subtropical Australia, with its exceedingly low humidity (in the interior) and its wide annual range of temperature, is quite unlike that of those regions, such as West Africa and the Philippines, which have been especially under discussion in the recent voluminous literature for and against white colonization of the Tropics. It should be compared, rather, with the southwestern United States or northern Argentina, in which Europeans seem to thrive no less than in Australia. However, the problem of acclimatization is so important and is, moreover, so far from a satisfactory solution that all observations bearing upon it must command attention. In the present stage of investigation the difficulty seems to be to extricate the immediate effects of meteorological conditions upon man from those indirect influences which are exerted through the medium of disease germs, the latter finding some climates more favorable to their development than others. Doctor Sambon is one of those who hold that climate *per se* plays but an insignificant part in determining the health of our race.[5]

DOCTOR HELLMANN'S "PRECIPITATION IN THE NORTH GERMAN RIVER BASINS".[6]

The scope of this work is not fully indicated by its title. Among North German rivers Doctor Hellmann includes all the streams of Germany that discharge their waters into the Baltic and North seas. Consequently only one important river system of Germany, that of the Danube, is excluded from consideration in this treatise.

In three massive volumes the author has gathered together all material regarding the rainfall of the German river basins, with the exception above noted, available down to the close of 1890, the year in which this great work was begun. In the case of rivers that take their rise outside of Germany, the territory considered includes all the upper basin of the river, from its source; consequently a great wealth of data for Russia, Austria-Hungary, Switzerland, France, and Belgium is here presented, so that this work constitutes by far the most extensive compilation of rainfall statistics ever made. The total number of stations represented in the tables is 3983, of which 2220 lie within the German Empire.[7]

The data tabulated comprise, for all or a part of the stations: Monthly and annual rainfall for each year of observation; greatest daily rainfall in each month; number of days with a measurable amount of rain; number of days with more than 0.2 mm.; number of days with snow; dates of first and last snowfall; number of days with sleet and hail.

The average length of a record is seven and one-half years. The following stations, within the region under discussion, have records of fifty years or more (to and including 1890):

In Germany.—Königsberg, 51 y.; Tilsit, 71 y. 3 m.; Danzig, 57 y. 7 m.; Breslau, 54 y. 9 m.; Gütersloh, 53 y. 11 m.; Münster, 51 y. 11 m.; Bayreuth, 59 y. 10 m.; Dresden 58 y.; Freudenstadt, 56 y. 1 m.; Isny, 57 y. 9 m.; Stuttgart, 72 y. 1 m.; Arnstadt, 53 y. 5 m.; Bremen, 60 y. 6 m.; Lübeck, 50 y. 5 m.; Frankfort a. M., 54 y. 3 m.

In Russia.—Warsaw, 84 y. 7 m.

In Austria.—Bodenbach, 55 y. 4 m.; Deutschbrod, 55 y. 8 m.; Lemberg, 56 y. 8 m.; Prague, 51 y. 5 m.

In France.—Nancy, 58 y.

Owing to the diversity in the lengths of the records and in the periods to which they refer, and to other circumstances that render the older records mutually incomparable, the data tabulated in this work have not been charted. Instead, a rainfall chart (for Germany only) has been made up from observations of some 3000 stations during the decade 1893–1902; during which time fairly uniform methods of observation were in vogue, and the short records were quite easily reduced to the full period. This chart shows that—

1. The rainfall of Germany decreases from west to east, both along the coast and in the interior.
2. The coastal plains have less rain than the interior.
3. The rainfall is remarkably dependent upon altitude, so that the rain chart indicates the relief of the country quite closely. Deeply shaded areas, denoting heavy rainfall, indicate the location of the important mountain ranges—Harz, Schwarzwald, Bavarian Alps, etc.—but many minor elevations are rendered conspicuous by the fact that relative altitude has more influence than absolute altitude in increasing the rainfall.
4. The effect of the prevailing westerly winds is clearly shown in the heavier rainfall on the west slopes of the mountains.

The first volume of Doctor Hellmann's work forms the text discussion of the results tabulated in volumes 2 and 3, and in it the student of rainfall will find much that is suggestive and of general application. The fluctuations in the rainfall of Germany and neighboring countries during the eighteenth and nineteenth centuries are fully treated.

From the many interesting contributions to climatology contained in this work we extract the following Table 1, showing the most remarkable cases of excessive rainfall, of at least one hour's duration, recorded within the German Empire:

TABLE 1.—*Excessive rainfall in Germany.*

Place.	Date.	Duration.	Amount.
		h. m.	*Inches.*
Waltershausen, Saxony	Aug. 14, 1884	1 00	2.95
Neustadt-on-the-Hardt	Sept. 7, 1886	1 00	3.86
Schwerin, Mecklenburg	May 11, 1890	1 35	4.37
Bobersberg, Brandenburg	June 21, 1895	2 00	5.06
Wildgarten, West Prussia	Aug. 1, 1896	1 40	5.28
Kemnitz, Saxony[8]	July 17, 1887	2 00	[9] 5.90
Görlsdorf, Brandenburg	June 12, 1889	2 15	5.20
Berlin	Apr. 14, 1902	3 30	5.63

[8] A village near Neustadt. Not Chemnitz. [9] Approximately.

PROGRESS OF METEOROLOGY IN AUSTRALIA.

By reading the dispatches from Melbourne, published in the Daily Telegraph, Sydney, N. S. W., June 16, 21, 22, 23, and 28, we see the progress being made toward the passage of the bill establishing a federal meteorological system for the whole of Australia. This bill was read for the first time in the Australian Senate on June 16; it makes provision for the appointment of a federal meteorologist, charged with the following duties:

[5] See his paper, "Acclimatization of Europeans in tropical lands", in the Geographical Journal, December, 1898, p. 589, and the interesting discussion thereon. See also C. Abbe in "Liberia" 1892, Bulletin No. 1, pp. 34–40, American Colonization Society, November, 1892, "Climate and Health in Liberia".

[6] Hellmann, G. Die Niederschläge in den norddeutschen Stromgebieten. Berlin. 1906. 3 vols.

[7] The most extensive works of this character heretofore published are Wild's "Regenverhältnisse des Russischen Reiches" and Eliot's "Rainfall of India". The former comprises results from 451 stations; the latter, 456. Schott's rainfall tables for the United States include some 1200 stations, but give the records in much less detail than do the works above named. Supan's "Verteilung des Niederschlags", with 1223 stations, is a collection of normals only.

(1) The taking and recording of meteorological observations.
(2) Forecasting of weather.
(3) Issue of storm warnings.
(4) Display of weather and flood signals.
(5) Display of frost and cold-wave signals.
(6) Distributing meteorological information.
(7) Other prescribed duties.

On the 21st of June the "meteorological bill" passed to the second reading. It seemed to be in charge of Senator Keating, who said the object of the measure is to federalize meteorological observatory work; that the state governments and interstate conferences showed a general consensus of opinion in favor of a central weather bureau, but there was a difference of opinion as to federalizing astronomical work.

June 22 the debate was resumed, and the question was discussed as to the relative advantages of one commonwealth department controlling all meteorological work, or one federal officer who would have no power unless six state departments chose to work harmoniously with him. The bill was then referred back to the committee, where Senator Givens moved that the federal officer must have been a resident of Australia for at least five years; but this amendment was negatived after Senator Keating had denied that the federal cabinet intended to import and appoint a foreign meteorologist.

The bill came up for a third reading on June 23, and then came before the house of representatives on the 28th, on which occasion, in answer to a query, it was stated that the present bill only provided that the federal government should take over the meteorological departments from the states, and not the astronomical work; and that some of the states were strongly of the opinion that this latter should be done.

From later Australian papers of July and August we obtain the following items. According to the Sydney Morning Herald of July 2:

The Minister of Home Affairs in the Federal Government moved the second reading of the bill before the House of Representatives, and explained the advantages that would be secured by the proposed reorganization. One member said that astronomical observatories should be reorganized on the same plan, but the motion for the second reading was agreed to, without amendments or instructions, and the bill referred back to committee. In committee it was stated that the cost of weather telegrams would be 40,000 and the additional expenditures 10,000 pounds sterling annually. A new clause was inserted, enabling arrangements to be entered into with other countries for the interchange of meteorological information. The committee then referred the bill back to the House for its third reading. The House, by 31 votes to 8, negatived the motion that a clause should be inserted providing for the taking over of the state astronomical departments by the Commonwealth. The bill was then read a third time and passed.

On August 3 the Daily Telegraph states:

Now that the Meteorology Bill has practically become a law the Minister of Home Affairs is taking steps to organize a Federal Bureau. Apparently the United States methods will be followed as far as practicable, and when the system of wireless telegraphy is adopted by the Commonwealth a number of outlying observatory stations will be fitted up, so that daily reports can be sent.

It is eminently proper to congratulate our Australian colleagues on the prospect that now opens up before them of being able to organize not only an Australian but an Australasian service, that shall fill up the great gap between the Indian Ocean on the west and South America on the east, between the Antarctic Continent on the south and the equator on the north. This immense region, covering one-fourth of the globe, belongs peculiarly to Australia, and must be conquered meteorologically by Australasian energy and science. Some such movement has been longed for and hoped for since 1873, and it gives us the greatest pleasure to see this beginning of the realization of our hopes.

GEORGE J. HECK.

Through the death of Assistant Observer George J. Heck, which occurred at Williston, N. Dak., on July 4, 1906, the Weather Bureau suffered the loss of a kind and genial personality and the services of a conscientious, careful worker. Mr. Heck was connected with the Government Meteorological Service more than twenty years, and commanded the respect and esteem of all his associates. His devotion to his official duties was marked. Even when stricken with a fatal malady, he insisted upon taking the regular observations, typifying to the last the guiding principle of his life. The memory of his sterling qualities will abide with those who knew him.—*D. J. C.*

PHYSICAL SOCIETIES AND JOURNALS.

Under the above heading, in the MONTHLY WEATHER REVIEW for November, 1905, Volume XXXIII, page 490, we have urged those interested in the physics of the atmosphere to keep in close touch with the progress of our knowledge in physics by joining some one of the prominent physical societies, or otherwise subscribing for their periodicals. The short list of journals published at that time unfortunately omitted the well-known Belgian journal, *Ciel et Terre*, which is now in its twenty-eighth year, and is devoted to meteorology, astronomy, and magnetism. We have, therefore, compiled the following general list of periodical publications, most of them journals of societies devoted, at least in part, to the physics of the atmosphere, although a few of them bear more especially on climatology; all of them are, we believe, easily procurable by individuals and should be in every good scientific library:

AUSTRIA-HUNGARY.

Mitteilungen aus dem Gebiete des Seewesens. M. 8°. Pola.
Sitzungsberichte der Kaiserlichen Akademie der Wissenschaften. M. 8°. Wien.

BELGIUM.

Bulletin de la Société belge d'Astronomie. M. 4°. Bruxelles.
Ciel et Terre. S-m. 8°. Bruxelles.
Revue Nephologique. M. 8°. Mons.

ENGLAND.

Aeronautical Journal. Q. 4°. London.
Geographical Journal. M. 8°. London.
Journal Manchester Geographical Society. S-a. 8°. Manchester.
Knowledge. M. 4°. London.
London, Edinburgh, and Dublin Philosophical Magazine. M. 8°. London.
Nature. W. 4°. London.
Philosophical Transactions of the Royal Society. I. f°. London.
Proceedings Royal Institution Great Britain. I. 8°. London.
Proceedings of the Royal Society. Series A, Mathematical and Physical. I. 4°. London.
Quarterly Journal of the Royal Meteorological Society. Q. 4°. London.
Science Abstracts. M. 8°. London.
Symons's Meteorological Magazine. M. 8°. London.

FRANCE.

Aérophile. M. 4°. Paris.
Annales de Géographie. B-m. 8°. Paris.
Annuaire de la Société Météorologique de France. M. 8°. Paris.
Comptes rendus hebdomadaires des séances. Académie des Sciences. W. 4°. Paris.
Journal de Physique. M. 4°. Paris.
Nature. W. 4°. Paris.